

**UNION CARBIDE  
CORPORATION  
UCAR CARBON COMPANY**

Lakewood, OH



**CLOSURE PLAN FOR PAD B**

**ENSR Consulting and Engineering**

**March 1989**

**Document Number 6900-048**

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## 1.0 INTRODUCTION

### 1.1 Objective of the Document

On April 15 and 28, 1988, Union Carbide Corporation's UCAR Carbon Company (UCAR) received letters from the EPA and OEPA, respectively, requesting the submission of a Part B Permit application for the UCAR facility's hazardous waste storage facilities. In a letter dated September 27, 1988, UCAR stated the intentions of closing these facilities while in interim status and operating them under generator status, thereby eliminating the need to prepare and submit a Part B Permit application.

UCAR maintains this position and intends to close the hazardous waste container storage area, known as Pad B, under interim status. The continued use of this pad will comply with generator requirements following EPA/OEPA closure approval.

This document details the methods by which UCAR will attain clean closure of the hazardous waste storage facility known as Pad B.

### 1.2 Overview of RCRA Closure Requirements

Regulations promulgated by the U.S. Environmental Protection Agency (EPA) on May 19, 1980 and January 12, 1981, and later amended on May 2, 1986, under the authority of the Resource Conservation and Recovery Act (RCRA) require owners/operators of hazardous waste management facilities (HWMFs) to prepare a plan that describes in detail the procedures and identifies the associated estimated costs to formally close HWMFs. The owner or operator of a HWMF is required to comply with the closure and post-closure provisions as specified in 40 CFR 265 Subpart G.

This closure plan outlines the procedures and costs associated with the closure of the container storage area known as Pad B at the UCAR facility in Lakewood, Ohio. The plan was

developed based upon the closure performance standard specified in 40 CFR 265.111 which states that HWMFs must be closed in a manner that:

- a) Minimizes the need for further maintenance;
- b) Controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere; and
- c) Complies with the closure requirements of 40 CFR 265, Subpart G.

The closure regulations do not stipulate a specific format for closure plans, however, all plans must provide certain minimum information (40 CFR 265.112 (b)):

- 1) A description of how each HWMF at the facility will be closed according to the closure performance standard;
- 2) A description of how final closure of the facility will be conducted, including an estimate of the maximum extent of the operations which will be unclosed during the active life of the facility;
- 3) An estimate of the maximum inventory of wastes in storage or treatment at any time, and a description of methods to be used during closure for removing, transporting, treating, and storing of hazardous waste;
- 4) A description of steps necessary to decontaminate the facility or render it nonhazardous at closure;
- 5) A description of other activities necessary during closure to ensure that it satisfies the closure performance standards; and
- 6) A schedule for final closure activities.

The purpose of the closure cost estimation requirements is to determine the amount of financial assurance needed. The closure cost estimate is based upon the methods of closure described in the closure plan. It must account for managing the

maximum inventory expected as indicated in the closure plan. A cost estimate for a given activity must include all costs of supervision, fuel, and maintenance costs for the equipment used, administrative costs, and provisions for contingencies. Administrative costs include all costs associated with taxes and insurance, as well as costs of routine administration, paperwork, and reporting. The closure cost estimate must be based upon the costs for a third party to close the facility. It may not incorporate any salvage value of hazardous wastes, facility structures or equipment, or land at the time of closure.

Upon approval of the Ohio EPA Director and/or U.S. EPA Administrator, UCAR may amend the closure plan/cost estimate when closure costs are more clearly defined.

With the submission of this plan, UCAR is notifying the State Commissioner and/or EPA Regional Administrator in writing at least 180 days prior to the expected date of final closure.

UCAR will remove all hazardous wastes in storage from the site in accordance with the approved closure plan within 90 days after receiving the final volume of hazardous waste. UCAR will complete partial and final closure activities 180 days after receiving the final volume of hazardous wastes, or within 180 days after approval of the closure plan, if that is later. The Director and/or Administrator may approve a longer closure period if UCAR complies with all applicable requirements for requesting a modification to the permit and demonstrates: (1) that the closure activities will take longer than 180 days to complete, and (2) that all steps have been taken to eliminate any significant threat to human health and the environment from the unclosed but inactive facility.

Within 60 days of completion of final closure, certification by an independent registered professional engineer that the facility has been closed in accordance with the approved closure plan must be submitted to the State Director and/or the EPA Regional Administrator. This certification will be signed by UCAR and the independent registered professional engineer. Documentation supporting the engineer certification will be

available upon request until UCAR has been released from the financial assurance requirements.

### 1.3 Organization and Use of Document

This document has been organized to provide the EPA/OEPA with the procedures that UCAR will follow to comply with RCRA closure requirements.

The document has been structured to facilitate the review process of the EPA/OEPA. The document begins by describing the UCAR facility and the HWMF to be closed in Sections 2.0 through 4.0. Following this description, closure-related information is provided in Sections 5.0 through 8.0. Additional administrative information, such as closure cost estimates and financial assurance along with closure certification are provided in Sections 10.0 through 12.0.

## 2.0 FACILITY DESCRIPTION

### 2.1 Facility Location

The UCAR plant is a manufacturing facility located in Lakewood, Ohio. The plant is situated within 22 acres of land bordered by Madison Avenue to the north, West 117th Street to the east, Amtrak railroad to the south, and Magee Street to the west. The entire facility is enclosed by a security fence. Entrance to the plant is from the guard station located along Madison Avenue. Figure 2-1 is a plot plan of the facility.

### 2.2 Manufactured Products

The UCAR plant has three major product lines which include: Karbate, GRAFOIL<sup>®</sup>, and Boron Nitride ceramic products.

Karbate is impervious graphite which consists of graphite and resins. It has been produced at the UCAR plant since 1937. In June 1988, the Karbate process was sold.

GRAFOIL<sup>®</sup> is flexible graphite made from graphite flake. The graphite flakes are treated, furnaced, and then rolled into sheets of graphite. GRAFOIL<sup>®</sup> has been replacing asbestos in products such as gaskets and valve packings.

UCAR's third major product line consists of ceramic products such as Boron Nitride, Pyrolytic Boron Nitride, and Pyrolytic Graphite. Boron Nitride is made from raw material powders. The resulting mixture is put through heating and hot pressure processes resulting in a solid plug. The plug is then machined into various products typically used in the vacuum metalizing industry.

Pyrolytic Boron Nitride and Graphite are made by a gas deposition process to produce crucibles and other shapes which are primarily used in the electronics industry.

FIGURE 2-1  
FACILITY PLOT PLAN

### 2.3 Hazardous Waste Management Facilities

Within the UCAR plant, there are four hazardous waste management facilities (HWMFs) which include three container storage areas (Pads A, B, and C) and one storage tank (Tank D). Descriptive information for each of these HWMFs is listed on Table 2-1. The location of each HWMF is shown on Figure 2-1.

TABLE 2-1  
HAZARDOUS WASTE MANAGEMENT FACILITIES INFORMATION

<u>HWMF</u>	<u>DIMENSIONS</u>	<u>CONSTRUCTION MATERIAL</u>	<u>SECONDARY CONTAINMENT</u>	<u>SUMP DIMENSIONS</u>	<u>TYPE OF FENCING</u>
Pad A	16 ft. wide x 20 ft. long x 0.5 ft. thick	Reinforced concrete	4-inch concrete curbing	18 inch diameter x 23 inches deep	7 ft. high steel wire
Pad B	13.5 ft. wide x 17.5 ft. long x 0.5 ft. thick	Reinforced concrete	4-inch concrete curbing	15 inch diameter x 19 inches deep	6 ft. high steel wire
Pad C	14 ft. wide x 60 ft. long	Concrete	None	No sump	No fencing
Tank D	10 ft. diameter x 20.5 ft. length	Mild steel (welded and riveted)	1 ft - 10 inch high concrete dike	No sump	No fencing

### 3.0 DESCRIPTION OF HAZARDOUS WASTE MANAGEMENT FACILITY TO BE CLOSED

Pad B is a container storage area used to store hazardous waste material in 55-gallon drums. It is located due south of Building #7 and adjacent to the main dust collector (refer to Figure 2-1). The container storage area has a 6 inch thick reinforced concrete pad which is 13.5 feet wide and 17.5 feet long (approximately 236 square feet) which slopes to a 15-inch diameter, 19 inch deep sump. The pad has 4-inch high concrete curbing and an elevated entrance ramp. The container storage area is totally enclosed with a six foot high steel wire fence which is kept locked at all times. Figure 3-1 shows the details of Pad B.

Pad B has not been used since late 1987, and the existing waste inventory was either removed or transferred to Pad A. The pad has been used for the storage of wastes generated from several areas within the plant including GRAFOIL<sup>®</sup> production and fabrication, ceramics production, degreasing operations, Karbate production and cleaning and maintenance operations within the paint room. Facility records which date back to 1980 indicate that the following types of wastes have been stored on the pad:

- o Waste 1,1,1-Trichlorethane Mixture (F001);
- o Waste Acetone Mixture (F003);
- o Waste Toluene Mixture (F003);
- o Waste Methanol Mixture (F005);
- o Waste Methyl Ethyl Ketone Mixture (F005);
- o Waste Stoddard Solvent (D001); and
- o Waste Corrosive Solids (D002).

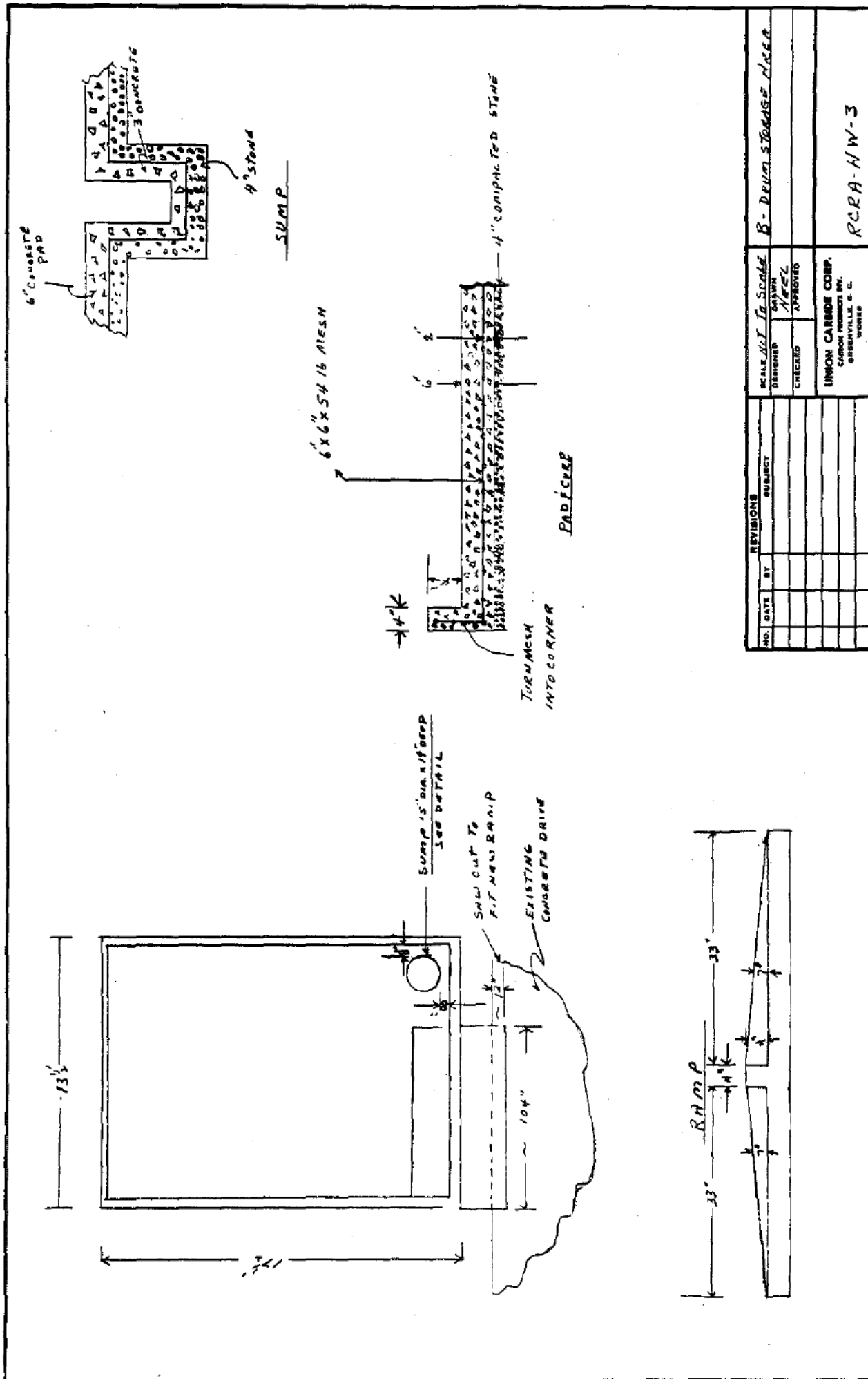


FIGURE 3-1  
PAD-B DETAILS

#### 4.0 MAXIMUM WASTE INVENTORY

Based upon UCAR's manifest records, Pad B has not had any waste inventory on it since late in 1987. Since there is no current inventory on the pad nor is there expected to be any stored on the pad at the time of closure, waste removal activities will not be necessary.

## 5.0 CLOSURE PERFORMANCE STANDARD

UCAR is proposing to clean close Pad B. The method by which UCAR intends to demonstrate clean closure is through chemical analysis of decontaminating rinsate. The analysis that was selected was derived from the types of wastes which were stored on the pad. The quantitative criteria that were selected to demonstrate the absence of contamination resulted from of a telephone conversation conducted on 13 February 1989 with EPA, OEPA, UCAR and ENSR representatives. The closure performance standard is discussed in greater detail below.

### 5.1 Sample Collection

UCAR will initiate closure of Pad B by decontaminating the pad via steam cleaning. The rinsate will be collected and stored in drums. Samples will be withdrawn from the drums as described in the Sampling Work Plan presented as Appendix I.

### 5.2 Analysis of Decontaminating Rinsate

As previously mentioned, the analytical constituents that have been selected for analysis of the decontaminating rinsate are directly correlated to the types of wastes which were stored at the facility. UCAR has conducted a historical review of operating and shipping records that have been maintained since 1980. These documents have been maintained per interim status requirements. The results of this review and analytical constituents are presented in Table 5-1.

### 5.3 Closure Criteria

The quantitative criteria that have been selected are a function of discussions with the OEPA and EPA. UCAR initially approached the closure of this unit by proposing to conduct representative and random predecontamination sampling for TCLP

TABLE 5-1

WASTE DESCRIPTION AND CONSTITUENT DETECTION METHODS  
USED FOR CLOSURE OF PAD B

<u>Waste Description</u>	<u>EPA ID Number</u>	<u>Constituent of Concern</u>	<u>Analytical Method</u>	<u>Number</u>
Waste Acetone Mixture	F003	Acetone	GC/MS for Volatile Organics	8240
Waste Toluene Mixture	F005	Toluene	GC/MS for Volatile Organics	8240
Waste Methyl Ethyl Keytone Mixture	F005	Methylethyl Keytone	GC/MS for Volatile Organics	8240
Waste Methanol Mixture	F005	Methanol	GC Nonhalogenated Volatile Organics	8015
Waste Degreasing Solution	F001	1,1,1- Trichloroethane	GC/MS for Volatile Organics	8240
Waste Stoddard Solvent	D001	Ignitability	Pensley-Martin Closed Cup	1010
Waste Corrosive Solid	D002	Corrosive	Electrometric	150.1

constituents and criteria. Based on the results of this sampling and analysis, UCAR could determine the existence of contamination at the pad. This proposal was rejected by the EPA, who suggested analysis of decontaminating rinsate, suggesting that, regardless of the predecontamination sampling results, decontamination would probably be required with analysis of the rinsate.

Therefore, UCAR has revised the closure performance standard to agree with EPA's suggestion. The criteria that were suggested were level of detection for listed organic constituents and standard criteria for RCRA characteristics. These criteria have been summarized in Table 5-2 for each type of waste previously stored at the facility. The methods by which these constituents will be analyzed have been presented in Section 5.2. Because level of detection is a function of analytical procedure and sample matrix, the criteria for listed organic constituents are not quantified but simply noted as the limit of detection. In addition, laboratory quality control and quality assurance documents cannot be included in this plan as they are laboratory specific.

TABLE 5-2  
QUANTITATIVE CRITERIA FOR CLEAN CLOSURE  
OF UCAR'S PAD B

<u>Waste Description</u>	<u>EPA ID Number</u>	<u>Constituent of Concern</u>	<u>Quantitative Level</u>
Waste Acetone Mixture	F003	Acetone	Level of Detection
Waste Toluene Mixture	F005	Toluene	Level of Detection
Waste Methyl ethyl keytone Mixture	F005	Methyl Ethyl Keytone	Level of Detection
Waste Methanol Mixture	F005	Methanol	Level of Detection
Waste Degreasing Solution	F001	1,1,1-Trichloroethane	Level of Detection
Waste Stoddard Solvent	D001	Ignitability	<140°F*
Waste Corrosive Solids	D002	Corrosive	pH <2.0*

\*The determination of contamination will be below these  
criteria for the constituent.

## 6.0 CLOSURE ACTIVITIES

Closure of Pad B will consist of five major work activities. These include: 1) decontamination of the containment structure; 2) confirmation sampling; 3) contingent second round of decontamination; 4) management of auxiliary equipment; and 5) closure certification. A brief description of the entire closure process follows.

Since there is no waste inventory expected to be on the pad, closure activities will initiate with general cleaning of the concrete pad via broom cleaning. Any debris will be drummed. The concrete pad will then be decontaminated using a steam cleaner. The generated wastewaters or rinsate will be collected from the containment sump and pumped into clean 55-gallon drums. (A more detailed description of decontamination activities are presented in Section 7.0).

Following decontamination activities, 20 percent of the drums of rinsate will be sampled via disposable sampling thieves. The drum samples will be composited into one representative rinsate sample. The composite sample will be shipped to an EPA-approved laboratory for analysis of the organics presented in Section 5.0 and RCRA characteristics including ignitability and corrosivity. The drums of rinsate will be moved back onto the pad area until the analytical results are received from the laboratory. If the analytical results are above the criteria listed in Section 5.3, the drummed rinsate will be disposed off site at an approved treatment, storage, or disposal facility (TSDF) and a second round of decontamination, including steam cleaning, sampling and analysis will be performed on the containment area of Pad B. The criteria, listed in Section 5.3, will again be used to determine if the second round of steam cleaning is sufficient. If the rinsate is again above the listed criteria, UCAR will implement another method of decontamination.

If the analytical results from the rinsate are below the listed criteria (Section 5.3), the pad will be considered "clean"

and the resulting rinsate will be discharged to the local POTW with appropriate permission.

Following confirmation of closure, the auxiliary equipment used throughout decontamination and sampling activities will be either disposed of appropriately or, if necessary, decontaminated via steam cleaning. (A more detailed description of the management of the auxiliary equipment is presented in Section 8.0).

Following decontamination, the concrete pad and fencing will remain intact. UCAR intends to use Pad B as a less than 90-day container storage area after closure has been certified via an independent professional engineer.

There is no partial closure anticipated for Pad B. The pad will be closed clean based upon the closure criteria presented in Section 5.0, therefore no post closure plan has been included. It is anticipated that Pad B will close during 1989.

## 7.0. DECONTAMINATION

Closure activities will initiate with the decontamination of Pad B. Decontamination activities will include broom sweeping and steam cleaning of the concrete containment area. Wastewaters or rinsate generated during steam cleaning will be collected in the concrete sump within the containment area. The collected rinsate will then be pumped into clean 55-gallon drums. Twenty percent of the drums will be sampled. These drum samples will be composited into one representative rinsate sample which will be analyzed for the volatile organics presented in Section 5.0 and RCRA characteristics including ignitability and corrosivity to confirm decontamination.

Following sampling activities, the drums containing the rinsate will be stored on the pad until the analytical results have been received. Depending upon the results, the drums will either be shipped off site as hazardous waste to an approved TSDF or the drums' contents will be discharged to the local POTW. Appropriate approvals will be obtained prior to the use of either option.

Precautions will be taken during decontamination procedures to ensure that all of the rinsate is collected. Decontamination of the area will be confirmed if the closure criteria specified in Section 5.3 are met. If necessary, a second round of decontamination including steam cleaning, sampling and analysis will be repeated in order to meet the closure criteria. If the closure criteria can not be met after two rounds of steam cleaning, UCAR will implement another method of decontamination to obtain clean closure.

Personnel will follow the requirements of the Health and Safety Plan included in Appendix I which ensures that the appropriate personal protective equipment will be worn during all stages of closure.

Following decontamination verification, the concrete containment area and surrounding fencing will remain intact.

Therefore, no disassembly activities will be included as part of closure.

No soil contamination is anticipated beneath the pad area because the pad has secondary containment (curbing and sump). In addition, there are no visible signs of staining, cracks or spalling on the pad. Therefore, there is no reason to suspect contamination beneath the containment structure.

All work will be performed in strict accordance with applicable federal, state, and local health, fire and safety regulations. An estimate of time and costs for these closure activities is presented in Section 10.0.

## 8.0 MANAGEMENT OF AUXILIARY EQUIPMENT

The auxiliary equipment used during the closure activities will either be containerized in 55-gallon drums and transported off site for appropriate disposal or decontaminated via steam cleaning. Auxiliary equipment will include brooms, sampling thieves, the sump pump and personal protective gear.

All work will be performed in strict accordance with applicable federal, state, and local health, fire, and safety regulations. An estimate of time and costs for this closure activity is presented in Section 10.0.

## 9.0 SCHEDULE FOR CLOSURE

As stated earlier, the container storage area, Pad B, is expected to close during 1989. With the submission of this plan, UCAR is notifying the State Commissioner and/or EPA Regional Administrator in writing at least 180 days prior to the expected date of final closure. Table 9-1 presents a milestone schedule to be followed as a guideline for closure activities.

TABLE 9-1  
MILESTONES FOR CLOSURE OF CONTAINER STORAGE AREA  
PAD B

<u>Closure Activity</u>	<u>Maximum Time from Initiation of Final Closure to Completion of Closure Activity</u>
1. EPA approval	1 day
2. Removal of waste inventory	N/A*
3. Decontamination of containment area	100 days
4. Confirmation sampling of contain- ment area	110 days
5. Receipt of analytical results	160 days
6. Auxiliary equipment disposal or decontamination	170 days
7. Completion of closure	180 days
8. Certification of closure completion by a registered professional engineer	240 days

---

\*This activity is not applicable to closure because use of Pad B was discontinued late in 1987 and no waste inventory is present.

## 10.0 CLOSURE COST ESTIMATE

Closure of Pad B will involve five major activities which include: 1) decontamination of the containment area, 2) confirmation sampling, 3) contingent second round decontamination, 4) management of auxiliary equipment, and 5) professional certification. This section of the closure plan identifies the assumptions made to develop the costs associated with the above-mentioned closure activities.

As required by 40CFR265.142, the cost estimate has been based upon the point in the facility's active life which would make closure costs the most expensive. In addition, the costs have been based upon third party costs.

The cost estimate is based upon the waste inventory and other hazardous wastes generated during decontamination activities being disposed as hazardous waste at an approved off-site facility. Hazardous waste transportation/disposal costs are based on past costs for these wastes. Costs for labor and equipment for the other closure activities were derived from the MEANS Site Work Cost Data, 1989 edition and from the Final Report Guidance Manual: Cost Estimates for Closure and Post-Closure Plans, (Subparts G and H), Volume I, II, III, and IV, November 1986, U.S. Department of Commerce, NTIS. Analytical service costs were derived from the 1989 ENSR Analytical Laboratories Price Schedule. All costs are based on 1989 dollars. Other miscellaneous assumptions were based on best engineering judgment.

Table 10-1 presents a worksheet which itemizes the individual work items involved in implementing each major closure activity. Refer to this table throughout the description of each closure activity for a breakdown of individual costs for each work item.

The assumptions associated with each of the five major closure activities are described in the sections that follow.

TABLE 10-1: CLOSURE COST ESTIMATE FOR CONTAINER STORAGE AREA PAD B

	QUANTITY	UNIT COST	UNITS	TOTAL COSTS	SUBTOTALS	COMMENTS
10.1 REMOVAL OF MAXIMUM WASTE INVENTORY						
=====						
NO WASTE INVENTORY TO BE STAGED ON THE PAD AT TIME OF CLOSURE						
-----						
SUBTOTAL					\$0.00	
-----						
10.2 DECONTAMINATION OF CONTAINMENT AREA						
=====						
GENERAL CLEANING OF PAD: BUILDING LABORER	1	\$25.40	HR	\$25.40		LABOR COST FOR BROOM SWEEPING
STEAM CLEANING: CLEAN APPROX. 50 SF PER HOUR						
EQUIPMENT:						
STEAM CLEANER, 200 GPH	1	\$43.00	DAY	\$43.00		RENTAL FOR 1 DAY; 5 HOURS FOR 236 SF AREA
OPERATING COSTS	5	\$0.57	HR	\$2.85		
LABOR:						
BUILDING LABORER	5	\$25.40	HR	\$127.00		LABOR COST
MANAGEMENT OF DECONTAMINATION WASHWATERS- DRUM THE RINSATE						
LABOR:						
BUILDING LABORER	5	\$25.40	HR	\$127.00		LABOR COST
PURCHASE DRUMS	18	\$50.00	DRUM	\$900.00		COST OF NEW DRUMS--VENDOR QUOTE
REPLACE DRUMS BACK ONTO PAD						
LABOR:						
BUILDING LABORER	2	\$25.40	HR	\$50.80		NUMBER OF GENERATED RINSATE DRUMS: 18
LIGHT EQUIP OPERATOR	2	\$30.60	HR	\$61.20		LABOR COST
EQUIPMENT: FORK LIFT	2	\$20.60	HR	\$41.20		LABOR COST FOR FORKLIFT DRIVER
PROTECTIVE CLOTHING/EQUIPMENT	2	\$85.00	PERSON	\$170.00		ASSUME UCAR OWNS THE FORKLIFT; OPERATION CHARGE
FOR ALL DECONTAMINATION						INCL. SPLASH SUIT, SHOE COVERS, APRON,
ACTIVITIES						GLOVES, GOGGLES, HALF-MASK RESPIRATOR,
						AND HARD HAT.
-----						
SUBTOTAL					\$1,548.45	
-----						
10.3 CONFIRMATION SAMPLING						
=====						
SAMPLING EQUIPMENT	4	\$20.00	EACH	\$80.00		DISPOSABLE SAMPLERS
LABOR:						
FIELD TECHNICIAN	4	\$25.00	HR	\$100.00		1 HR/SAMPLE REQUIRED TO COLLECT, PRESERVE AND LOG.
SHIPMENT OF SAMPLE	1	\$50.00	SHIPMT	\$50.00		INC. SHIPPING COSTS AND SUPPLIES(ie. COOLER, ICE)
LAB ANALYSIS:						
VOLATILES	1	\$230.00	SAMPLE	\$230.00		
CORROSIVITY	1	\$60.00	SAMPLE	\$60.00		
IGNITABILITY	1	\$35.00	SAMPLE	\$35.00		
-----						
SUBTOTAL					\$555.00	
-----						

TABLE 10-1: CLOSURE COST ESTIMATE FOR CONTAINER STORAGE AREA PAD B

## 10.4 CONTINGENT SECOND ROUND DECONTAMINATION

	QUANTITY	UNIT COST	UNITS	TOTAL COSTS	SUBTOTALS	COMMENTS
MANAGEMENT OF CONTAMINATED RINSATE						
TRANSPORTATION	250	\$3.60	LD-MILE	\$900.00		80 DRUMS/TRUCKLOAD; 250 MILES DISTANCE TO FACILITY
OFF-SITE TREATMENT	990	\$0.50	GAL	\$495.00		TYPICAL COMMERCIAL HAZARDOUS WASTE TREATMENT COST
STEAM CLEANING: CLEAN APPROX. 50 SF PER HOUR						
EQUIPMENT:						
STEAM CLEANER, 200 GPH	1	\$43.00	DAY	\$43.00		RENTAL FOR 1 DAY; 5 HOURS FOR 236 SF AREA
OPERATING COSTS	5	\$0.57	HR	\$2.85		
LABOR:						
BUILDING LABORER	5	\$25.40	HR	\$127.00		LABOR COST
MANAGEMENT OF DECONTAMINATION WASHWATERS- DRUM THE RINSATE						
LABOR: BUILDING LABORER	5	\$25.40	HR	\$127.00		LABOR COST
PURCHASE DRUMS	18	\$50.00	DRUM	\$900.00		COST OF NEW DRUMS--VENDOR QUOTE
REPLACE DRUMS BACK ONTO PAD						
LABOR:						
BUILDING LABORER	2	\$25.40	HR	\$50.80		NUMBER OF GENERATED RINSATE DRUMS: 18
LIGHT EQUIP OPERATOR	2	\$30.60	HR	\$61.20		LABOR COST
EQUIPMENT:						LABOR COST FOR FORKLIFT DRIVER
FORK LIFT	2	\$20.60	HR	\$41.20		ASSUME UCAR OWNS THE FORKLIFT; OPERATION CHARGE
PROTECTIVE CLOTHING/EQUIPMENT						
FOR ALL DECONTAMINATION						GLOVES, GOGGLES, HALF-MASK RESPIRATOR,
ACTIVITIES						AND HARD HAT.
SAMPLING AND ANALYSIS:						
SAMPLING EQUIPMENT	4	\$20.00	EACH	\$80.00		DISPOSABLE SAMPLERS
LABOR: FIELD TECHNICIAN	4	\$25.00	HR	\$100.00		1 HR/SAMPLE REQUIRED TO COLLECT, PRESERVE AND LOG.
SHIPMENT OF SAMPLE	1	\$50.00	SHIPMT	\$50.00		INC. SHIPPING COSTS AND SUPPLIES(ie. COOLER, ICE)
LAB ANALYSIS:						
VOLATILES	1	\$230.00	SAMPLE	\$230.00		
CORROSIVITY	1	\$60.00	SAMPLE	\$60.00		
IGNITABILITY	1	\$35.00	SAMPLE	\$35.00		
MANAGEMENT OF SECOND ROUND RINSATE:						
DISCHARGE TO POTW	990	\$0.00	GAL	\$0.00		ASSUME POTW COST IS NEGLIGIBLE
SUBTOTAL					\$3,303.05	

10-3

TABLE 10-1: CLOSURE COST ESTIMATE FOR CONTAINER STORAGE AREA PAD B

	QUANTITY	UNIT COST	UNITS	TOTAL COSTS	SUBTOTALS	COMMENTS
-----						
10.5 MANAGEMENT OF AUXILIARY EQUIPMENT	=====					
DISPOSABLE GEAR						
LABOR: BUILDING LABORER	4	\$25.40 HR		\$101.60		ONE LABORER REQUIRED FOR 4 HOURS
TRANSPORT	250	\$3.60 LD-MILE		\$900.00		
INCINERATION	0.05	\$1,000.00 TON		\$50.00		ASSUME 100 POUNDS OF SOLID WASTE GENERATED
-----					-----	
SUBTOTAL					\$1,051.60	
-----					-----	
10.6 PROFESSIONAL CERTIFICATION	=====					
PERIODICAL INSPECTION AND DOCUMENTATION	36	\$50.00 HR		\$1,800.00		REGISTERED INDEP PROFESS ENGINEER, INC 3 INSPECTS
ADMINISTRATIVE - CLERICAL LABOR	12	\$19.00 HR		\$228.00		W/REPORTS, REVIEW PLAN, AND FINAL DOCUMENTATION
-----					-----	4 HOURS/WEEK FOR 3 WEEKS
SUBTOTAL					\$2,028.00	
-----					-----	
TOTAL DIRECT CAPITAL COSTS					\$8,486.10	
=====					=====	
INDIRECT COSTS	=====					
ADMINISTRATIVE AND SUPERVISORY (15% OF DIRECT CAPITAL COSTS)				\$1,272.92		
CONTINGENCY FEE (10% OF DCC)				\$848.61		
-----					-----	
TOTAL					\$10,607.63	
-----					-----	
(ucc-padb)						

### 10.1 Removal of Maximum Waste Inventory

No waste inventory has been stored on Pad B since late 1987, and no waste is expected to be staged on the pad at the time of closure, therefore removal costs are estimated to be \$0.

### 10.2 Decontamination of the Containment Area

Decontamination of the containment area of Pad B will require a one-man crew for 1 hour to broom sweep and 5 hours to steam clean the concrete containment area. It was estimated that the containment area will have approximately 236 square feet requiring steam cleaning. This value was based on the dimensions of the containment area, 13.5 feet by 17.5 feet. Approximately 50 square feet of area can be steam cleaned per hour. A 200-gallon per hours steam cleaner will be rented for one day and operated for 5 hours.

The rinsate will be collected from within the sump in the containment area and pumped to 55-gallon drums. New drums will be purchased. Approximately 18 drums of rinsate will be generated. A laborer will be required for 5 hours to manage the generated rinsate.

Protective clothing will be required for a two man crew. This may include a splash suit, shoe covers, an apron, gloves, goggles, a half-mask respirator, and a hard hat for each man.

Following sampling, the drums of rinsate will be placed in the Pad B container storage area while awaiting the analytical results. A two-man crew with a forklift will be required for two hours each to move the drums onto the pad.

As shown on Table 10-1, the total estimated cost for decontaminating the containment area is approximately \$1,500.

### 10.3 Confirmation Sampling

As stated in the Sampling Work Plan (Appendix I), 20 percent of the generated drums of rinsate will be sampled to confirm

decontamination of the containment area. Therefore, 4 drums will be sampled for Pad B (the calculation is presented in Appendix I). Four disposable samplers will be purchased. A field technician will be required for 4 hours to collect, preserve, and log the samples. The drum samples will then be composited into one representative rinsate sample. The composite sample will be sent for analysis of volatiles described in Section 5.0, corrosivity, and ignitability. A shipping charge of \$50 per shipment has been included. The total cost for confirmation sampling and analysis is approximately \$555.

#### 10.4 Contingent Second Round Decontamination

In the unlikely event that a second round of decontamination is required based on the analytical results for the rinsate, the 18 drums of rinsate will be transported to an approved TSDF. For purposes of this cost estimate, the costs have been based upon typical costs for treatment at an approved hazardous waste treatment facility located approximately 250 miles away. Typical transportation and treatment costs are \$3.60 per loaded mile, and \$0.50 per gallon, respectively.

The remaining activities under this second round of decontamination will replicate those presented in Section 10.2 (steam cleaning and management of the rinsate) and Section 10.3 (sampling and analysis of the rinsate).

For this cost estimate, it is assumed that the analytical results of the second round of rinsate are below the closure criteria and the rinsate can be discharged to the local POTW with negligible costs incurred. Therefore, the total cost for the contingent second round of decontamination is approximately \$3,300.

#### 10.5 Management of Auxiliary Equipment

An estimated one container (55 gallon drum) of disposable gear (e.g., brooms, sampling thieves, splash suit, gloves)

weighing approximately 100 pounds will be collected during the course of facility closure. This drum will be disposed as solid hazardous waste at an approved off-site TSDF. For costing purposes only, an off-site incinerator has been assumed. A laborer will be required for 4 hours to manage the waste. Transportation costs are based upon the 250 mile trip at a cost of \$3.60 per loaded mile. Incineration costs are estimated at \$1,000 per ton. The total cost for this closure activity is estimated to be approximately \$1,050.

#### 10.6 Professional Certification

Assume that 36 hours will be required for a registered independent professional engineer to oversee closure and certify that the facility has been closed in accordance with the closure plan. This includes time to review the closure plan, time for three site inspections with draft reports, and time for final documentation.

Assume that 12 hours will be required from the owner's or operator's staff for administrative duties and clerical work. Therefore, the total cost of professional certification is estimated to be \$2,000.

#### 10.7 Total Costs Including Indirect Costs

A summary of the estimated closure costs for the container storage area, Pad B, is presented on Table 10-2. The total direct capital costs for the closure activities is estimated to be approximately \$8,500. A general provision for contingencies of 10 percent of the direct capital costs has been added. For administrative tasks including taxes, insurance, and supervision not listed elsewhere, an additional cost equal to 15 percent of the total direct capital cost has also been added. Therefore, the total cost for closing Pad B is estimated to be \$11,000.

TABLE 10-2: SUMMARY OF CLOSURE COSTS FOR PAD B

CLOSURE ACTIVITY -----	COST -----
10.1 REMOVAL OF MAXIMUM WASTE INVENTORY	\$0.00
10.2 DECONTAMINATION OF CONTAINMENT AREA	\$1,548.45
10.3 CONFIRMATION SAMPLING	\$555.00
10.4 CONTINGENT SECOND ROUND DECONTAMINATION	\$3,303.05
10.5 MANAGEMENT OF AUXILIARY EQUIPMENT	\$1,051.60
10.6 PROFESSIONAL CERTIFICATION	\$2,028.00
-----	-----
TOTAL DIRECT CAPITAL COSTS	\$8,486.10
-----	-----
INDIRECT COSTS:	
ADMINISTRATIVE AND SUPERVISORY (15% OF DCC)	\$1,272.92
CONTINGENCY FEE (10% OF DCC)	\$848.61
=====	=====
TOTAL COSTS	\$10,607.63
=====	=====
(ucc-padb)	

## 11.0 FINANCIAL ASSURANCE

The financial test and corporate guarantee for closure have been met pursuant to 40 CFR 265.143. UCAR's financial mechanism is included on the pages that follow.

**UNION CARBIDE CORPORATION** 39 OLD RIDGEBURY ROAD, DANBURY, CT 06817-0001

CAROLYN A. O'BOYLE  
MANAGER  
BANKING DEPARTMENT

October 17, 1988

Ms. J. Kwasniewski  
RCRA Enforcement Section  
Division of Solid and  
Hazardous Waste Management  
Ohio Environmental Protection Agency  
P. O. Box 1049  
1800 Water Mark Drive  
Columbus, OH 43266-0149


Dear Ms. Kwasniewski:

Subject: Financial Assurance  
Closure and Post-Closure  
Hazardous Waste Management Facility

Attached is the revised Schedule A for the Trust Agreement dated as of April 30, 1987, between Union Carbide Corporation, the Grantor, and Chemical Bank, the Trustee. The closure costs for the Lakewood Plant on Scheduled A have been increased to \$70,000 from \$68,000. Schedule B was revised to reflect an increase of \$1,000, which reflects the change for Lakewood.

Also, the EPA ID number for the Parma Facility was corrected to OHD 003926748.

Very truly yours,

  
Carolyn A. O'Boyle

CAO'B:kbc

Attachment

Copy to: Mr. G. McFarland, Chemical Bank, NY

Blind Copy to: D. Mieskowski  
J. Petros  
H. T. Prossa

0066B:88

SCHEDULE A \*

Union Carbide Corporation - Lakewood Plant

EPA ID No. OHO 004167383

Lakewood, OH

Closure Costs \$ 70,000 (R)

Post-Closure Costs - 0 -

Union Carbide Corporation - Parma Facility

EPA ID NO. OHD 003926748

Parma, OH

Closure Costs \$ 119,000

Post-Closure Costs - 0 -

L-Tec Company - Ashtabula Plant

EPA ID NO. OHO 000821454

Ashtabula, OH

Closure Costs \$1,463,000

Post-Closure Costs \$ 553,000

\* Revised as of 09/21/88

0066B:12//

SCHEDULE B \*

Union Carbide Corporation - Lakewood and Parma, OH  
L-Tec Company - Ashtabula, OH

The Trust Fund is comprised of cash in the sum of \$2,083,000

\* Revised as of 09/21/88

## 12.0 CLOSURE CERTIFICATION

UCAR will submit to the Ohio EPA Director and the EPA Administrator certification by UCAR and an independent registered professional engineer that the container storage area Pad B has been closed in accordance with the specifications of the approved closure plan. The independent professional engineer will inspect the facility during the closure period and after all the decontamination procedures have been completed. Closure certification will be submitted within 60 days of completion of closure activities.

APPENDIX

APPENDIX I  
SAMPLING WORK PLAN

## 1.0 INTRODUCTION

The following secondary containment area Sampling Work Plan was prepared for Union Carbide Corporation's UCAR Carbon Company in Lakewood, Ohio. The plan will be used to determine the existence of contamination at the containment structure. The results of the sampling and subsequent analysis will be used to close the hazardous waste management facility (HWMF).

This document is organized as follows: Section 2.0 Sampling Plan which delineates sampling methodology and protocol for the containment area; and Section 3.0 the Health and Safety Plan for decontamination and sampling.

## 2.0 SAMPLING PLAN

### 2.1 Approach

Union Carbide Corporation's UCAR Carbon Company (UCAR) has elected to demonstrate clean closure by conducting decontamination rinsate sampling of the secondary containment structure. The method by which clean closure will be demonstrated is based on the analytical results of representative sampling of drums of collected decontamination rinsate.

The selection of the analytical constituents is based on the types of hazardous wastes stored in the area. It is UCAR's opinion that analyzing for these constituents will identify the current status of contamination at the pad (i.e. contaminated or not contaminated).

The remainder of this document provides the methodology and procedures that will be used to close the HWMF.

### 2.2 Sampling Methodology

During the decontamination process of the Pad B containment structure, the rinsate from the process will be collected and drummed. There is an existing sump which accumulates liquids within the containment structure. A portable pump will be used to deliver collected rinsate from the sump to the drums.

To ensure that a representative sample is acquired for analysis, UCAR will withdraw samples with disposable stratified sample thieves from 20 percent of the rinsate drums that are filled. UCAR has calculated the estimated number of drums that may be generated using documented decontamination rinsate generation rates.

The dimensions of Pad B are 13.5 feet by 17.5 feet. Therefore, the total area of the base of the Pad B secondary containment structure is 236 square feet. The estimated area

that can be decontaminated in an hour is 50 square feet.<sup>1</sup> The most common steam cleaner uses approximately 200 gallons per hour.<sup>2</sup> Therefore, using the equation:

$$\begin{aligned}\text{number of drums} &= \text{pad area} \times \text{rinsate generation} \\ &\quad \text{rate/decontamination rate/55 gallons per} \\ &\quad \text{drum} \\ &= 236 \text{ ft}^2 \times 200 \text{ gal/hr}/50\text{ft}^2/\text{hr} \\ &= 944 \text{ gal.} \\ &= 17.16 \text{ 55-gallon drums}\end{aligned}$$

Thus, the total estimated number of drums that will be sampled is 4. Once all the drums have been filled, four of the drums will be arbitrarily selected. This will impart randomness to the sampling protocol.

UCAR will composite the decontamination rinsate into one sample. Each drum that is selected will be sampled to the bottom of the drum with a disposable stratified sampling thief. A new sampling thief will be used for each drum sample.

Drums will be placed on pallets prior to filling with decontamination rinsate. Following decontamination of the pad, the drums will be stored on the pad until the analytical results have been received. If the results indicate contamination by failing the criteria listed in Section 5.0, the drums will be shipped off site as hazardous. If the drums do not indicate contamination the rinsate will be discharged to the local POTW per granted permission.

---

<sup>1</sup> Guidance Manual: Cost Estimates for Closure and Post Closure Plans (Subparts G and H), EPA/530-SW-87-009A, Pg. 5-3.

<sup>2</sup> Means Site Work Cost Data; RS Means Company Inc. 1989, Pg. 14.

### 2.3 Sample Containers

The use of sample containers is a function of the type of analyses that will be conducted on the samples. UCAR will be conducting analyses for volatile organics and RCRA characteristics to include ignitability and corrosivity as described in greater detail in the Closure Performance Standard Section of the Closure Plan. Therefore, two types of containers will be used for sample collection and shipment.

The containers that will be used by sampling personnel will be purchased from an outside facility which sells new or precleaned amber bottles, or new or precleaned containers will be supplied by the sampling vendor. At a minimum, the containers will have undergone a triple rinse with methanol and deionized water. The container caps will have Teflon liners. The types of containers, along with preservatives and holding times for the required analyses are presented in Table 2-1.

TABLE 2-1  
SAMPLING CONTAINERS, PRESERVATIVES, AND  
HOLDING TIMES FOR UCAR'S CLEAN CLOSURE ANALYSIS

<u>Analyte</u>	<u>Container</u>	<u>Preservative</u>	<u>Holding Time</u>
Volatile organics	(2) 40ml amber glass with Teflon lined cap	Cool, 4°C, 4 drops of concentrated HCl	14 days
RCRA characteristics	1 gal. amber glass with Teflon lined cap	Cool, 4°C	7 days

## 2.4 Sample Collection

The equipment to be utilized for the sampling of decontaminating rinse drums will concur to guidelines illustrated in EPA document SW 846. The liquid sampling device to be employed will be a stratified sampling thief. This device will be disposable and only used once, thus eliminating the need to decontaminate the sampler.

Special attention will be given to the sampling for volatile organics. These sample containers will be filled in such a manner as to preclude any air pockets or bubbles (zero head space). All other containers will be filled to capacity.

All samples collected including the quality control samples will be refrigerated in a cooler packed with ice or its equivalent and sent to an approved laboratory within 24 hours.

Decontaminating and sampling personnel will wear the necessary personnel protective equipment as prescribed by Section 3.0 of this Work Plan.

## 2.5 Sample Identification and Shipping

The sampling team will assign a discrete number to the collected sample such that it identifies the sample. As the samples are collected, the sampling team will record the information outlined on the waste sample log sheet depicted in Figure 2-1. Concurrently, the sampling team will utilize chain-of-custody records as shown in Figure 2-2. The minimum information recorded on the chain-of-custody in addition to the signatures and dates of all custodians will include:

- o Sampling site identification,
- o Sampling date and time,
- o Identification of sample collector,
- o Sample identification, and
- o Sample description (type and quantity).

## WASTE SAMPLE LOG SHEET

Field Sample No.: \_\_\_\_\_

Stream No.: \_\_\_\_\_

Add'l. Stream Nos: \_\_\_\_\_

Collector(s): \_\_\_\_\_Date: \_\_\_\_\_ Time: \_\_\_\_\_Process Source: \_\_\_\_\_Waste Description: \_\_\_\_\_Site Type (Lagoon, Tank, Drum, Pipe): \_\_\_\_\_Sample Location: Bldg/Floor/Column: \_\_\_\_\_ Department: \_\_\_\_\_Label Information: \_\_\_\_\_Sample Collection: \_\_\_\_\_

Equipment Used: \_\_\_\_\_

Sample Type (grab, composite, etc.): \_\_\_\_\_

<u>Laboratory Destination</u>	<u>No. Sample Containers</u>	<u>Analyses Requested</u>	<u>Date Shipped</u>
Pittsburgh	_____	_____	_____
Houston	_____	_____	_____
Concord	_____	_____	_____
Other	_____	_____	_____

(See attached chain-of-custody records for more information)

Field Data:

Type of material (physical state): \_\_\_\_\_

Color: \_\_\_\_\_

Layers: \_\_\_\_\_

pH: \_\_\_\_\_

Other: \_\_\_\_\_

General Comment(s): \_\_\_\_\_

FIGURE 2-2: CHAIN OF CUSTODY RECORD

Client/Project Name			Project Location			ANALYSES							
Project No.			Field Logbook No.										
Sampler: (Signature)			Chain of Custody Tape No.										
Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample							REMARKS		
Relinquished by: (Signature)					Date	Time	Received by: (Signature)					Date	Time
Relinquished by: (Signature)					Date	Time	Received by: (Signature)					Date	Time
Relinquished by: (Signature)					Date	Time	Received for Laboratory: (Signature)					Date	Time
Sample Disposal Method:					Disposed of by: (Signature)					Date	Time		
<b>SAMPLE COLLECTOR</b>  Environmental Research and Technology, Inc. 896 Virginia Road Concord, MA 01742 617-369-8910					<b>ANALYTICAL LABORATORY</b>					<b>ERT</b>  No 5309			

Each sample bottle will be packed in a cooler and shipped to an EPA/OEPA approved laboratory for analysis. Each cooler will be sealed with a chain-of-custody tape and the seals will be signed and dated. The chain-of-custody seal numbers will be entered on the chain-of-custody form (in the signature box). The current custodian will sign the chain-of-custody record as "Relinquished By", enter the date and time, tear off and file the back copy with the appropriate waste sampling log and place the remainder in the shipping container with the samples.

The samples will be received at the laboratory by the Laboratory Sample Custodian. He will sign the chain-of-custody record as "Received for Laboratory" and enter the date and time.

## 2.6 Quality Control Samples

In addition to the drum samples, quality control samples will be collected. These samples include field blanks, trip blanks, and duplicate drum samples.

One field blank and trip blank will accompany the drum samples for each type of analysis to be conducted. A duplicate drum sample will be collected in exactly the same fashion as that described in Sections 2.2, 2.3, and 2.5. The blank samples will contain deionized water. The bottles will be labelled as duplicates and they will be retained should confirmation analysis be required.

### 3.0 HEALTH AND SAFETY PLAN

The Health and Safety Plan which follows this text is an example of the type and level of personnel protective equipment needed to decontaminate the pad and to sample the decontaminating rinsate.

Because the actual decontamination and sampling project cannot be awarded until the closure plan is approved, a vendor cannot be selected to conduct the work. Since ENSR has not been selected as the vendor to conduct such activities, ENSR cannot guarantee that this Health and Safety Plan will be used or followed. It will be the responsibility of UCAR to ensure that the vendor selected for decontaminating and sampling activities provides an adequate health and safety plan or follows the plan provided. If ENSR is selected as the decontaminating and sampling vendor, the following Health and Safety Plan will be followed implicitly.

HEALTH AND SAFETY PLAN

for the

UNION CARBIDE CORPORATION'S - UCAR CARBON CO.  
(Name of Site/Facility)

Located in

Cleveland (Lakewood), Ohio  
(City) (State)

Project Number: 6900-048

Document Number: 6900-048-600

Division Number: 73

Date: March 10, 1989

Prepared By: Robert Merrill Approved By: \_\_\_\_\_

Date: March 10, 1989 Date: \_\_\_\_\_

Robert J. Merrill, CIH  
(Health and Safety Manager)

Date: March 10, 1989



Formerly ERT

ENSR Consulting  
and Engineering

740 Pasquinelli Drive  
Suite 124  
Westmont, IL 60559  
(312) 887-1700

HEALTH AND SAFETY PLAN

for the

Union Carbide Corporation's - UCAR Carbon Co.  
(Name of Site/Facility)

Located in

Cleveland (Lakewood), Ohio  
(City) (State)

Project Number: 6900-048-600

Division Number: 73

Date: March 10, 1989

ISSUED TO:

\_\_\_\_\_  
(Representing)

\_\_\_\_\_  
(Name and Title)

I have received a copy of the ENSR Health and Safety Plan for this project and I have read and understand its purpose and scope.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date



Formerly ERT

PRE-JOB SAFETY MEETING

ENSR Consulting  
and Engineering

740 Pasquinelli Drive  
Suite 124  
Westmont, IL 60559  
(312) 887-1700

Date: \_\_\_\_\_

Attended by:

Name

Signature



Topic(s) covered:

Conducted by:

--

## SITE/PROJECT DESCRIPTION

### SITE DESCRIPTION:

The plant is located in Cleveland (Lakewood), Ohio at West 117th Street. It began operations in 1894 at which time it produced arc carbons. Through the years, a variety of carbon products and other items have been produced such as graphite and carbon "brushes" for generators, wet and dry battery cells, vinylite karbate (impervious graphite), boron nitride, and "GRAFOIL" (flexible graphite).

### SCOPE OF PROJECT/TASK:

Decontamination - secondary containment areas (i.e., concrete pads). These concrete pads served as container storage areas.

Decontamination will include steam cleaning. Sampling of the generated rinsate will also be performed.

### PROPOSED DATE(S) OF FIELD ACTIVITIES:

90 days after approval of closure plans.

### PERSONNEL REQUIREMENTS:

#### NAME

#### RESPONSIBILITY

Mark Nardulli

ENSR Project Manager

(to be assigned)

ENSR Field Representative

(Contractor)

Decontamination Work

## HAZARD EVALUATION

### MATERIALS OF CONCERN:

Acetone, toluene, MEK, methanol,  $\text{Cr}^{+6}$ , 1,1,1-trichloroethane, stoddard solvent, and sulfuric acid residues.

### PHYSICAL STATE:

Liquid - above materials may be found in dilute concentrations in rinsate.

The use of steam cleaning could result in a potential for vapor exposure to more volatile contaminants which may be present.

### HEALTH HAZARD INFORMATION:

The following TLV's represent eight hour average airborne exposures to which most workers can be exposed without adverse health effects:

Acetone - 750 ppm  
Methyl chloroform (1,1,1-trichloroethane) - 350 ppm  
Methyl ethyl ketone (MEK) - 200 ppm  
Methanol - 200 ppm  
Stoddard solvent - 100 ppm  
Toluene - 100 ppm  
Sulfuric acid 1 mg/m<sup>3</sup>

The solvent compounds listed above (acetone, methyl chloroform, MEK, methanol, etc.) are central nervous system depressants in very high airborne concentrations (above TLV levels). Since steam cleaning of concrete pads will occur outdoors, exposure to these solvents above TLV's is unlikely. Skin contact should definitely be avoided with these contaminants. Methanol especially is a readily absorbed through the skin. Many of the above compounds are potent eye and skin irritants. Chromium in hexavalent (+6) form is highly toxic with some water insoluble compounds considered definite human carcinogens. The metal has also been linked to kidney damage in humans.

#### CHEMICAL/PHYSICAL PROPERTIES:

Chromium (+6) can occur in both water soluble and insoluble forms. Methanol, sulfuric acid, acetone and MEK are all water soluble or miscible in water. Stoddard solvent, toluene, and methyl chloroform are relatively insoluble. Pure sulfuric acid reacts violently with water. Stoddard solvent in pure form combustible liquid (flash point between 100-200°F). Acetone, toluene, MEK, and methanol are flammables in pure form (flash points below 100°F).

TOPOGRAPHICAL HAZARDS: None

#### OPERATIONAL HAZARDS:

If any electrical hazards exist on or near concrete pads, such as overhead powerlines, special precautions for steam cleaning maybe necessary. Call health and safety for instructions.

## PERSONAL PROTECTION/TRAINING REQUIREMENTS

### RESPIRATORY PROTECTION REQUIREMENT: (Level C/Level D)

One-half mask or full facepiece cartridge respirator with cartridges effective against both organic vapors and toxic aerosols (dust, mists, etc). For MSA equipment, the correct cartridge would be GMA-H. Use during steam cleaning operation mandatory. During other portions of work on-site, downgrading to Level D is permissible if air monitoring shows lack of airborne contaminants.

### PROTECTIVE CLOTHING REQUIREMENT:

<u>  X  </u>	WORK CLOTHES/COVERALLS (long sleeved)
<u>  X  </u>	CHEMICAL PROTECTIVE CLOTHING. TYPE? Polyethylene coated tyvek
<u>      </u>	WORK SHOES (steel toe/shank)
<u>  X  </u>	BOOTS. TYPE? Steel toe chemically resistant boots.
<u>  X  </u>	GLOVES. TYPE? Vinyl Inners/Nitrile Outers.
<u>  X  </u>	HARD HAT
<u>  X  </u>	FACE SHIELD
<u>  X  </u>	SAFETY GLASSES

### MODIFICATIONS:

Chemically resistant boots over steel toe work shoes acceptable substitute. Also, full facepiece respirator acceptable substitute for faceshield and safety glasses.

### TRAINING REQUIREMENTS:

All site personnel will have received 40 hour training certification for hazardous waste site workers per 29 CFR 1910.120.

### HAZARD COMMUNICATION:

ENSR Field Representative will conduct a pre-job health and safety meeting with Contractor employees to familiarize them with all of the health and safety plan requirements.

Note: Good operating procedure would be for contractor to start steam cleaning on downwind side of concrete pads and work backwards such that contractor is, as much possible, upwind of mist generated by steam.

## AIR MONITORING REQUIREMENTS

- 1) INSTRUMENT: HNu Photoionization Detector
- 2) INSTRUMENT: Draeger Pump/Colorimetric tubes for more specific readings.

MONITORING PROCEDURE: Periodically monitor breathing zone of workers at different stages of operation (HNu has a photoionization sensitivity of 10.0 for toluene, 5.7 for acetone, 1.0 for methanol, and 6.3 for MEK with an 11.7 eV lamp). You will be measuring a mix of compounds. A conservative action level of 10 units on HNu scale is set to protect against possibility of low TLV compounds. Sustained breathing zone levels below 10 units allow downgrading to Level D (no respirator) except during steam cleaning when respirators are mandatory.

## DECONTAMINATION PROCEDURES

### EQUIPMENT/SOLVENTS/SOLUTIONS:

Alconox or equivalent. (Note: Special decon procedures may apply to sampling utensils for quality assurance purposes. See applicable section of ENSR Work Plan).

### DECONTAMINATION PROCEDURE(S):

- 1) ITEM(S): Applies to all personnel protective equipment (i.e., hard hat, boots, gloves, respirator etc.)

PROCEDURE: Setup decon area, wash in basin of alconox solution, rinse in basin of clean water, and dry. (Note: PPE should be stored in a clean, dry location when not in use).

### DISPOSAL PROCEDURE:

Disposable items, such as coveralls, are to be sealed in a plastic bag and disposed of in full compliance with client procedures.

NOTE: The above specified decontamination procedures pertain to the decontamination of personal protective equipment only. Procedures for the decontamination of sampling tools or other related equipment should be specified in the subject work plan and/or QA plan.

EMERGENCY REFERENCE

AMBULANCE: 911

POLICE: 911

FIRE: 911

HOSPITAL: Lakewood Hospital (216) 521-4200  
Location: 14519 Detroit Street  
Lakewood, OH 44107

DIRECTIONS TO HOSPITAL:

MAP INCLUDED? No

(To be determined by ENSR Field Representative upon arrival on-site-prior to start of work).

POISON CONTROL CENTER: 1/216-231-4455 (Cleveland listing)

NATIONAL RESPONSE CENTER: 1/800-424-8802

-----  
• ENSR REPRESENTATIVES:

ENSR/WESTMONT, IL 312/887-1700

- BOB MERRILL X 311

ENSR/CONCORD, MA

- KEVIN POWERS (QA) 508/635-9500

ENSR/PITTSBURGH/PA

- Mark NARDULLI (PM) 412/261-2910

**CBI exemption** (HOME)

• AGENCY REPRESENTATIVE:

• CLIENT REPRESENTATIVE:

NEAREST PHONE: To be determined prior to start of on-site activities.